

ADVANCED
WINDOWS

Mastering your sound card

Are you struggling to fathom the options on your sound card? Ben Pitt explains how you can adjust the controls in Windows to provide the perfect sound check for your computer

Sounds cards can seem like innocuous devices until you open up their control panel software. Suddenly you're confronted with a barrage of bizarre-sounding options for '3D karaoke in a sewer pipe', when all you wanted was to switch on your microphone. Because these control panels vary so widely, we'll discuss the controls built into Windows. These work for most sound cards and integrated audio chips, but not all. If adjusting Windows' settings doesn't work, look for the equivalent settings on your sound card's utility software.

The quality and features offered by motherboard audio chips mean few people need a dedicated sound card. However, any audio peripheral that connects via USB – headsets, speakers and microphones – effectively has a sound card built in. If your PC has integrated audio and a PCI or USB sound card, you might find Windows doesn't know which one to use. To specify your preference, click Start, Settings, Control Panel, Sounds and Audio Devices, followed by the Audio tab. Here, you'll find drop-down lists for playback and recording.

Windows is usually sensible enough to switch to using a USB device when you connect it and revert back to integrated audio at other times. However, if it forgets, this is where you can remind it. If you have both a PCI sound card and integrated audio, it's usually best to disable the integrated audio. Select System from the Control Panel, the Hardware tab, Device Manager, Sound, video and game controllers, right-click the relevant device and select Disable. There is usually a BIOS setting that will disable it at a lower level, too.

SURROUND EFFECTS

Surround speaker systems immerse you in the centre of the action, but you need to specify your speaker setup in Windows and within specific applications in order for them to work correctly. To adjust the Windows setting, open Sounds and Audio Devices and, on the Volume tab, click the lower button labelled Advanced. Here you'll find a drop-down list of speaker types, ranging from No Speakers to 7.1 wide configuration.

Most surround speakers comprise five satellites and a subwoofer. This configuration is known as 5.1, which you'll find in the list. Some use an additional pair of side satellites for 7.1 surround; for this, select 7.1 home theatre speakers. In 2002, Creative produced a 6.1 set, the Inspire 6.1 6700. Windows XP doesn't explicitly support 6.1, so you'll need to select this in your sound card's proprietary utility. For 4.1 systems, select Quadraphonic speakers.

Those with 2.1 stereo-plus-subwoofer speakers might be confused to find this isn't listed. However, the default Desktop stereo speakers option is fine, as the speakers will siphon bass frequencies to the subwoofer internally. The same principle applies to 4.1 or quadraphonic speakers. 5.1 systems work differently, in that there's a dedicated audio signal from the PC to feed the subwoofer. This is used to carry low-frequency

effect (LFE) sounds – rumbles and thuds in DVD videos intended specifically for the subwoofer. However, as with 2.1 and 4.1 systems, the subwoofer in a 5.1 system should also reproduce the bass sounds from all the other channels. Some speakers get this wrong, though, in which case you'll need to get the sound card to apply bass redirection. Few sound cards support this, although Creative's range is an exception.

Even once Windows is set up for surround sound, you can't assume it will work in every application. Some games require you to specify your speaker configuration in the preferences. Surround-sound DVD playback can be particularly tricky. Most DVD video soundtracks are encoded in Dolby Digital format (also called AC3) in stereo and 5.1 configurations. Dolby Digital soundtracks must be decoded, but DVD-playback software bundled with PCs often supports only stereo decoding. To check, find the audio tab in your software's configuration panel. If only stereo and S/PDIF options are available, your software can decode only stereo soundtracks.

There are three solutions. If you own a Creative sound card, set the playback software's audio output to S/PDIF and enable AC3 decoding in the Creative control panel utility. Alternatively, if your speaker system has an S/PDIF input and built in Dolby Digital decoding, use them both for surround DVD playback. Failing that, you must upgrade your software. Cyberlink PowerDVD 7 Standard supports surround sound and costs £19 from www.amazon.co.uk. Once you're equipped with surround-capable software, choose the speaker configuration that matches your setup. You may need to select surround sound in the DVD menus for each disc you watch, although most discs play this by default.

GETTING AUDIO IN

Getting audio out of your PC is easy, at least at a basic level, but getting audio in is usually more involved. In

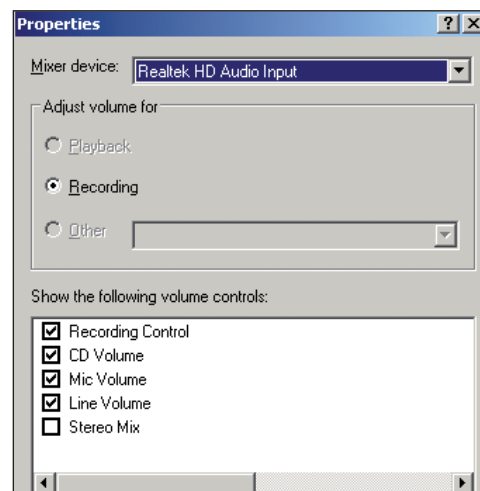
INTRODUCTION

PC audio is something you can usually take for granted. Switch on a new computer and you'll be greeted with Microsoft's chirpy welcome sound followed by all the appropriate noises as you browse the web, listen to CDs and MP3s, watch DVDs and play games. However, some tasks are less straightforward, and many of the above can be improved with some choice tweaks. Whether you're using integrated audio, a PCI sound card or an external USB device, a bit of insider knowledge will help you get more from it.

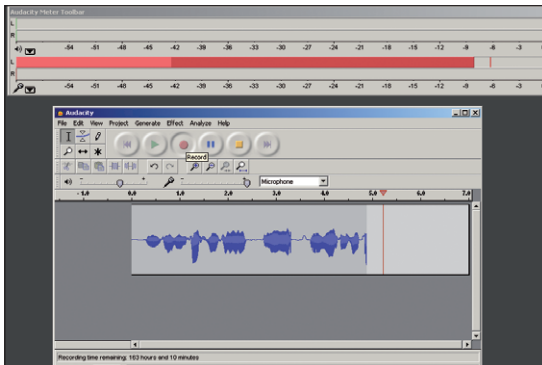
Ben Pitt

Music and photography expert

ben@computershopper.co.uk



▲ Buried deep within Windows' mixer settings is a list of recording sources



▲ You can float and resize Audacity's meters to get a precise display of input volume

order to record something, you need to specify which input your microphone is connected to, and carefully set the level to get a strong signal without going over the top and suffering from distortion.

To do this in Windows XP, open Sounds and Audio Devices from the Control Panel and, on the Volume tab, click the upper Advanced button to open the mixer utility. There are actually two mixers: one for playback (what comes out of the speakers) and one for recording (what Windows applications can 'hear'). The playback mixer is the one you see first, but you need to use the record mixer, so click Options, Properties, Recording. If this option is greyed out, select Input in the Mixer device drop-down list. You should then be presented with a list of possible recording sources. Those that are ticked will appear as options in the mixer, so tick all the ones you're ever likely to need and click OK.

COMMON INPUT SOURCES

The most common input sources are microphones and line-level sources such as CD players, MP3 players and VHS recorders. Both types should have a dedicated input on your sound card and a corresponding mixer channel. Some sound cards allow you to select only a single source, which you do by clicking Select for that channel. Others allow you to mix their

various inputs together as you record, so each channel will have a Mute tick box. Either way, most of the time you'll just want to capture audio from a single source, so select it to the exclusion of all others.

Windows' mixer doesn't have a level meter, but you'll need one to set the level for your chosen input. With any luck, the software you're using, whether it's sound-recording, voice-recognition or voice-over IP (VoIP) software, will include one. If it doesn't, download Audacity from <http://audacity.sourceforge.net>. It's a highly capable freeware audio editor that includes accurate level metering. It's also ideal for recording

audio to the hard disk.

Click the input meter at the top-right of the interface to activate it. The software also incorporates input source switching and volume control that synchronises with Windows' settings. When setting the level, you should aim to get the average volume between -12dB and -6dB, but without the loudest signal hitting maximum volume as this will lead to distortion. To view the meter in more detail, click it to deactivate it, select View, choose the Float Meter Toolbar and resize it.

Sadly, you can't connect guitars or record decks directly to most sound cards, or at least sound quality will be poor if you do. Various specialist sound cards are designed for use with guitars, such as M-Audio's JamLab, which we reviewed in *What's New: Audio, Shopper* July 2007. For record decks, if you have hi-fi separates, connect the preamp's record out sockets to your sound card's line input. If these aren't available, you might get acceptable quality from your hi-fi's headphone output. Alternatively, a dedicated phono preamp costs around £20.

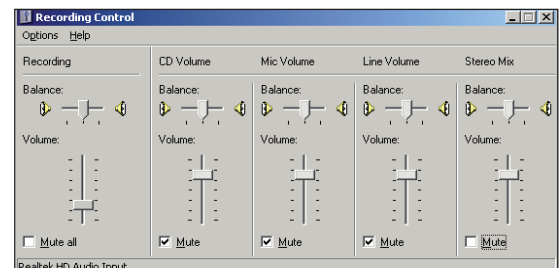
When you're recording audio, you'll probably want to hear it at

the same time. The recording and playback mixers are independent, so you need to activate and turn up the line or mic input in the playback mixer to hear it live. This won't have any effect on what's captured. However, if you're using a microphone for videoconferencing or VoIP, keep it muted from the playback mixer to avoid any chance of feedback. A headset, which combines headphones and microphone, is ideal for these tasks. It will keep the microphone close to your mouth for clear reception, and the use of headphones avoids any spill from speakers to microphone, which would cause echoes.

GROUP EFFORT

If you want to record multiple sources simultaneously, perhaps using a microphone and a CD player to record a podcast, this may be possible by un-muting both inputs, but you'll find it hard to set the balance between these two signals, because the recorded volumes won't match what you're hearing. Still, many modern sound cards include an option to record whatever is coming out of the speakers, which means you can get your balance using the playback mixer. This option takes various names in the recording mixer, such as Stereo Mix, Wave Out, Sum or What U Hear, depending on the sound card manufacturer.

This brings the added benefit of being able to record sounds produced by the computer, such as media-playback software or audio from the internet. However, you still need to set the overall record level in the recording mixer. **CS**



▲ Record from a variety of sources simultaneously by selecting Stereo Mix as your record source

Making sweet music Music production in Windows

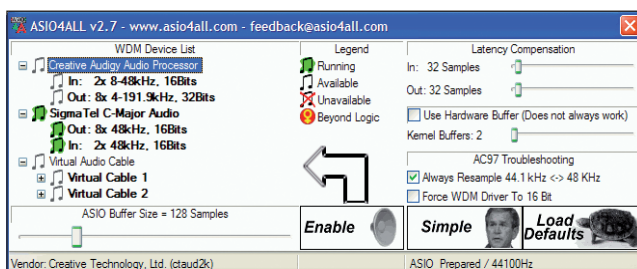
Music production presents its own challenges. It's critical that you can hear yourself clearly to be able to record in time and in tune with your work in progress. This is easy when recording with a microphone, as you can just turn up that input in the playback mixer. However, if you need to hear the sound after it has passed through your music-production software, such as when playing a guitar through PC-based effects, or if the sound is produced by the software itself, as is the case with software instruments played with a MIDI keyboard, things get more complicated.

The solution is to abandon Windows' standard Multimedia Extension (MME) drivers and use Windows Driver Model (WDM) or Audio Stream

Input Output (ASIO) drivers instead. Both of these offer low-latency performance. Latency is the time it takes for the software to respond to your input. A latency of 3ms is indistinguishable from zero to most people, while latencies up to 10ms are usually bearable when monitoring your performances. However, latencies lower than 10ms place higher demands on your PC, which can cause glitches, so you should experiment with the latency value in your sound card's software to find the fastest reliable setting.

Sadly, WDM support is rare in music-production software, while ASIO support is rare with domestic sound cards. This is one reason why a specialist music-production sound card with ASIO support is often a shrewd investment. However, if you don't want to splash out on a new sound card, try the free ASIO4ALL utility from www.asio4all.com, which is an ASIO-to-WDM converter.

Audio production also throws up the question of what sample rate to work at. 44.1kHz, 16-bit is the CD standard, but music-production sound cards and software often support sample rates up to 192kHz, 24-bit. Opinion is split on this one, but we believe that increasing the sample rate beyond 44.1kHz offers very little benefit, and none at all if you're recording for CD distribution. However, recording at 24-bit is a good idea, as this means you can record at a relatively low level to avoid any risk of distorting the input without sacrificing resolution.



▲ ASIO4ALL adds ASIO support to any WDM-compatible sound card